Claims

1. A method for producing a drum commutator comprising a barrel-shaped support body (1) made of insulating compression-molding material, a plurality of metal conductor segments (3, 3′) and an equal number of carbon segments (4), which are joined to the conductor segments (3, 3′) in electrically conductive relationship, comprising the following steps:
   - producing a metal conductor blank comprising a plurality of conductor segments, each two of which adjacent to one another are joined to one another via a bridge part (20), the distance from the radial inside faces of the bridge parts (20) to the commutator axis (2) corresponding substantially to the distance from the radial outside faces of the conductor segments (3, 3′) to the commutator axis (2);
   - producing a carbon shell with a substantially regular cylindrical outside face (26), at least the radial inside face and one axial end face of the carbon shell being metallized;
   - joining the conductor blank together with the carbon shell in axial direction to form electrically conductive contact zones (17) between the conductor segments (3, 3′) and the metallized end face of the carbon shell;
   - injection molding of a support body (1) made of insulating compression-molding material onto the composite part comprising the conductor blank and the carbon shell in an injection-molding die, the metallized radial inside face of the carbon shell being covered with compression-molding material;

- removing the bridge parts (20) with formation of an annular, closed, substantially regular cylindrical surface (19) with alternating zones of compression-molding material and metal;
- forming the carbon segments (4) by incising the carbon shell by axial cuts (16) extending in radial direction as far as the support body (1) and running in axial planes disposed between each two conductor segments (3, 3'), the annular, closed, substantially regular cylindrical surface (19) with alternating zones of compression-molding material and metal being at least partly preserved.

2. A method according to claim 1, wherein the cuts (16) with which the carbon shell is divided into carbon segments (4) extend only through carbon and compression-molding compound, but not through metal of the conductor blank or of the conductor segments (3, 3').

3. A method according to claim 1, wherein the conductor segments (3, 3') are provided with substantially radially protruding terminal lugs (8), the bridge parts (20) extending over the entire axial length of the conductor blank being at least partly removed by being sheared off axially.

4. A method according to claim 1, wherein the electrically conductive joint between the conductor segments (3, 3') and the carbon shell is produced by soldering, the soldered joint being limited to radially inner partial regions of the end faces of the conductor segments (3').

5. A method according to claim 1, wherein the entire surface of the carbon shell is metallized, and at least the radial outside face of the carbon shell is machined to strip the metallized surface after the conductor blank has been joined together with the carbon shell, especially after the support body has been molded on by injection.

6. A method according to claim 5, wherein after the carbon shell has been joined together with the conductor blank, and in particular before the support body (1) has been molded on by injection, it is machined to strip the metallized surface in the outer annular region of both end faces.

7. A method according to claim 1, wherein after the conductor blank has been joined together with the carbon shell, and in particular before the support body has been molded on by injection, an annular slot open to the outside is machined into the carbon shell adjacent to the conductor blank.

8. A method according to claim 1, wherein the two halves of the injection-molding die used for injection molding the support body bear sealingly on two annularly closed sealing faces situated opposite one another, one being disposed on the free end face of the conductor blank and the other being disposed on the free end face of the carbon shell.

9. A drum commutator for an electrical machine, comprising a barrel-shaped support body (1) made of insulating compression-molding material, a plurality of metal conductor segments (3, 3') with terminal lugs (8) disposed thereon,

and an equal number of carbon segments (4), which are joined to the conductor segments (3, 3') in electrically conductive relationship,
characterized by an annular, closed, substantially regular cylindrical surface (19) disposed adjacent to the terminal lugs (8) and comprising alternating zones of compression-molding material and metal, as well as by a metallized inner surface that belongs to the carbon segments (4) and is joined to the support body.

10. A drum commutator according to claim 9, wherein the conductor segments (3, 3') are completely embedded in compression-molding compound in the circumferential direction, so that no metal of the conductor segments (3, 3') is exposed in the parting cuts (16) forming the air gaps that insulate the carbon segments (4) from one another.

11. A drum commutator according to claim 9, wherein the carbon segments (4) and the conductor segments (3, 3') are provided with anchor portions (28; 11) that extend radially inward and are embedded in the support body (1) while forming undercuts.

12. A drum commutator according to claim 11, wherein the carbon segments and the conductor segments are joined to one another in electrically conductive relationship only in the region of the anchor portions disposed opposite one another.

13. A drum commutator according to claim 9, wherein the conductor segments (3') are each provided with a thick-walled terminal region (6') having a terminal lug (8), a

thick-walled contact region (7') that contacts the associated carbon segment (4), and a thin-walled transition region (31) disposed between the terminal region (6') and the contact region (7').

14. A drum commutator according to claim 13, wherein the transition regions are oriented substantially radially relative to the commutator axis (2).

15. A drum commutator according to claim 13, wherein the transition regions (31) are oriented obliquely relative to the commutator axis (2).

16. A drum commutator according to claim 13, wherein respective ribs (30) of compression-molding material are disposed between the terminal regions (6') of the conductor segments (3') on the one hand and the carbon segments (4) on the other.

17. A drum commutator according to claim 16, wherein the axial thickness of the rib (30) of compression-molding material is at least 0.5 mm.

18. A drum commutator according to one of claim 9, wherein the terminal lugs (8) are chamfered at the end, the chamfers facing the outer circumferential faces of the conductor segments (3, 3').

19. A drum commutator according to claim 13, wherein the end faces belonging to the conductor segments (3, 3') and the carbon segments (4) and facing one another in the region of

the contact zones (17) are plane.

20. A drum commutator according to claim 9, wherein the end faces (25) belonging to the carbon segments and facing away from the conductor segments (3, 3') are covered in a radially inner region by a shoulder (14) of the support body (1).

21. A drum commutator according to claim 20, wherein the shoulder (14) of the support body (1) projects in axial direction beyond the end face of the carbon segments (4).